

REMARKS/ARGUMENTS

Claims 1-29 are pending in the present application. Claims 1, 8, and 19 are independent.

Allowable Subject Matter

Applicants appreciate the Examiner's indication that claims 19-29 are allowed. Applicants further appreciate the Examiner's indication that claim 7 is allowable and would be allowed if rewritten in independent form including all of the features of the base claim and any intervening claims. Furthermore, the allowability of claim 18 is appreciated with Applicants noting that claim 18 would be allowed if rewritten to overcome the second paragraph rejection and to include all of the features of the base claim and any intervening claims. With respect to claims 7 and 18, Applicants respectfully submit that their respective independent claims are patentable for the reasons set forth below.

Specification Objection

The specification objection has three items which are traversed in detail below.

First, the disclosure is objected to because it contains an embedded hyperlink. The specification, specifically page 20, has been amended to delete the embedded hyperlink.

Secondly, the disclosure is objected to because of a typographical error on page 20. An appropriate amendment has been made to page 20 to correct this inadvertent typographical error.

Thirdly, it is alleged that the specification fails to provide proper antecedent basis for "link access procedure" and "resilient packet ring." Applicants respectfully submit that these terms do indeed enjoy not only antecedent basis but full and enabling support in the specification as filed. The link access procedure is described on at least pages 16 and 18 and is part of original claims 10 and 17. Furthermore, the resilient packet ring is supported on at least page 18 of the specification. Applicants further submit that these two terms are conventional terms and technologies that the present invention utilizes to advantage as further described in the detailed description of the invention.

In view of the above amendments and arguments, Applicants respectfully request reconsideration and withdrawal of the specification objections.

35 U.S.C. § 112, Second Paragraph

Claims 8 and 17 are rejected under 35 USC 112, 2nd paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. This rejection, insofar as it pertains to the presently pending claims, is respectfully traversed.

Initially, Applicants submit that the alleged insufficient antecedent basis for claim 8 and the typographical error in claim 17 do not rise to the level of being indefinite under 35 U.S.C. § 112, second paragraph. Indeed, the statements made in the Office Action appear to reflect an understanding of the invention as recited in the claims. Nevertheless, claim 8 has been amended in a minor way to provide antecedent basis which is even more clear than previously. Furthermore, the options of claim 17 are now stated in the alternative utilizing the conjunctive "or."

In view of the above amendments and arguments, Applicants respectfully request reconsideration and withdrawal of the 35 U.S.C. § 112, second paragraph rejection.

Art Rejections

Claims 1, 5, and 6 stand rejected under 35 USC § 103(a) as being unpatentable over Xiao ("Requirements For Pseudo-Wire Emulation Edge-To-Edge (PWE3)", draft-ietf-pwe3-requirements-03.txt published June 2002). Claims 8-12, 16, and 17 are also rejected under 35 U.S.C. § 103(a) as being unpatentable over Xiao. Furthermore, claim 13 is separately rejected under 35 U.S.C. § 103(a) as being unpatentable over Xiao. These rejections, insofar as they pertain to the presently pending claims, are respectfully traversed.

Xiao is an example of a system that the presently disclosed and claimed invention seeks to avoid. Specifically, Xiao establishes pseudo-wires over a packet switched network (PSN) rather than directly over the optical layer or optical connection. Clearly, Xiao's pseudo-wires are carried between provider edged (PE) nodes over a packet switched network (PSN) such as IP (internet protocol) or MPLS (multi protocol label switching). Indeed, the terminology definitions provided in Xiao define the pseudo-wire as "a connection between two PE's carried

over a PSN. The PE provides the adaptation between the CE and the PW." Xiao further defines a PSN (packet switched network) as "a network using IP or MPLS as the unit of switching."

Fig. 1 of Xiao makes it crystal clear that the pseudo-wire is carried over the packet switched network or PSN tunnel.

In sharp contrast, the presently claimed invention establishes a pseudo-wire directly over the optical connection and between the provider edge nodes of the communications network. The optical connection is an entirely different layer than the packet switch network. Reference is made to Fig. 1 of the invention showing the network protocol layer model according to the concepts of the invention. As shown therein, the optical layer (e.g., SONET transport layer) is utilized to carry the pseudo wiring. Thus, the pseudo-wire is established directly over the optical connection.

Xiao, on the other hand, does not establishes the pseudo-wire directly over the optical connection but instead carries the pseudo-wire or otherwise establishes this pseudo-wire over a packet switched network tunnel which interposes a layer between the pseudo-wire and the optical layer.

Thus, Xiao essentially corresponds to the conventional art discussed in the background of the invention. As discussed therein, utilizing a packet switch network (such as Xiao) to

carry pseudo-wires has several disadvantages. First of all, such a design must necessarily rely upon MPLS/IP networks with expensive high-performance routers to support the control messaging and label distribution protocol thereby greatly increasing the cost of transporting layer-2 traffic which is otherwise inexpensive and relatively simple. In reality, such routers are essentially used to perform relatively trivial switching functionality but their high cost and complexity unnecessarily complicates the network and leads to a much higher cost than is necessary. By carrying the pseudo-wires directly over the optical connection, the present invention totally avoids such complicated and expensive packet switching networks.

The present invention avoids the disadvantages of the conventional pseudo wiring techniques by utilizing already deployed optical layer gear such as SONET switching gear. The invention permits carriers to tunnel user traffic through well-provisioned optical transport backbones (e.g., SONET backbones) from the edge of their networks. In contrast, conventional techniques such as those described by Xiao require the development of yet another layer of tunnels on top of SONET cross connections such as building MPLS label switch paths as is being proposed by router vendors which is not an economically practical or technically beneficial.

For further details, the Examiner is urged to read the Background of the Invention as well as the general description and overview of operation which describe other advantages of the invention over conventional techniques such as those described in Xiao.

In summary, there is a clear, patentable difference between Xiao and claim 1. Namely, Xiao fails to disclose or suggest establishing a pseudo-wire directly over the optical connection and between the provider edge nodes of a communications network. Xiao clearly interposes a packet switch network layer between the pseudo-wire and the optical layer thereby teaching away from the directly establishment of a pseudo-wire over the optical connection as claimed.

One of the key advantages of the invention is the ability to route and transport both command messages and data over the same connection. Rather than acknowledge one of the key inventive advantages, the Office Action instead and improperly, utilizes Official Notice to teach that using the same optical connection for both data and commands is well known expected in the art. Applicants specifically and vigorously challenge this use of Official Notice. Official Notice is intended to be utilized only for ancillary details of the invention which may be readily found in the prior art. Applicants submit that there

is no such teaching in the prior art, particularly when this feature is read in the context of the claimed invention and the supporting specification.

Thus, not only does Xiao fail to disclose or suggest establishing a pseudo-wire directly over the optical connection, but the complete lack of teaching as to transporting or tunneling command messages within the same optical connection established that is used to transport the packet data is another failing of the Office Action. The use of Official Notice is completely insufficient to teach this important claimed feature. Applicants specifically challenge the use of Official Notice and assert that there is no such reference.

Regarding independent 8, rather than provide a reference teaching significant claim features, the Office Action again improperly utilizes Official Notice. This time, Official Notice is taken in a manner similar to that above in that using the same optical connection to transport both data and commands is well known and expected in the art. Applicants specifically challenge this use of Official Notice and assert that there is no teaching or suggestion at least for the steps of transmitting the data packets with an appended encapsulation label over the optical connection using an optical signal transport frame, particularly taken in combination with the step of tunneling at

least one command message associated with the customer data flow within the optical signal transport frame used by said transmitting step as further recited in claim 8. At least these combination of steps are completely absent from the applied art and the improper use of Official Notice is insufficient to provide the missing teachings.

For all of the above reasons, taken alone or in combination, Applicants respectfully request reconsideration and withdrawal of the 35 U.S.C. § 103 Xiao art rejections.

Other Art Rejections

Claims 2, 3, 4, 14, and 15 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Xiao in view of Gregg (USP 6,721,335). This rejection, insofar as it pertains to the presently pending claims, is respectfully traversed.

The base reference of Xiao has been attacked at length above. Applicants respectfully submit that Xiao is no longer applicable against the independent claims 1 and 8 as the Office Action alleges. Applicants further submit that Gregg fails to remedy the noted deficiencies in Xiao. Indeed, Gregg is merely applied to teach using an encapsulation label and is not applied to teach establishing a pseudo-wire, as in claim 1, directly over the optical connection or the features of transmitting data

packets and tunneling at least one command message within the optical transport frame used by the transmitting step to transmit the data packets as in claim 8. These features are completely absent from Gregg and Gregg merely teaches some convention encapsulation label techniques.

Applicants further submit that this rejection is only being applied with respect to the dependent claims and that patentability for the independent claims 1 and 8 has clearly been established above.

For all of the above reasons, taken alone or in combination, Applicants respectfully request reconsideration and withdrawal of the 35 U.S.C. § 103 Xiao-Gregg rejection.

Conclusion

In view of the above amendments and remarks, the Examiner is respectfully requested to reconsider the outstanding rejections and issue a Notice of Allowance in the present application.

All of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request the Examiner to reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action,

and as such, the present application is in condition for allowance.

Should the Examiner believe that any outstanding matters remain in the present application, the Examiner is respectfully requested to contact Michael R. Cammarata (Reg. No. 39,491) at the telephone number of the undersigned to discuss the present application in an effort to expedite prosecution.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

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